

**REMARKS**

New claims 88 and 89 have been added to this application. Support for these newly-presented claims can be found, for example, in Figure 1. Claim 41 has been canceled, and commas have been added to claim 68 to improve its reading. Therefore, claims 34-40, 42-56, 58, and 60-89 are now pending.

Applicants thank Examiners Dixon and DeMille for their courteous interview of April 2, 2008. In view of the recent allowance of U.S. Patent Application Serial No. 09/680,465, which includes independent claims to a valve cover that increases in height, applicants have decided against including such a limitation in the independent claims of the present application and will explain the patentability of the presently-claimed invention in view of the art of record.

The combination of Simpson and Söderberg and Shindel, alone or in combination with Cover, would not have rendered applicants' invention obvious to a person of ordinary skill. Applicants independent claims require a valve cover that holds the flexible flap against a flap-retaining surface in a location and position relative to the seal surface of the valve seat such that the flap is pressed towards the seal surface in an abutting relationship therewith, when a fluid is not passing through the orifice, under any orientation of the valve.

Thus, the structure of applicants' valve, particularly the location and positioning of the seal surface relative to the flap-retaining surface, enables applicants' flap to remain in an abutting relationship to the seal surface under any orientation of the flap. As shown below, applicants' invention further requires that the valve cover have a surface that holds the flap against the flap-retaining surface:

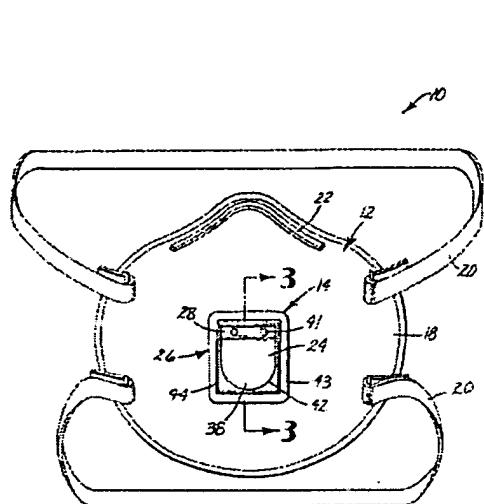


Fig. 1

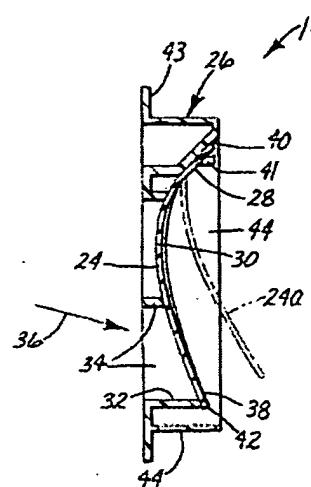


Fig. 3

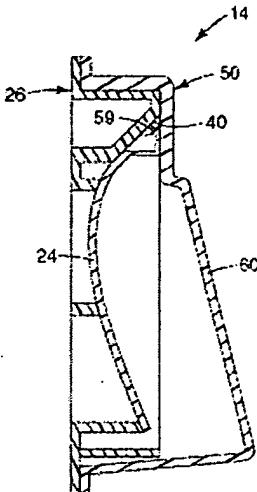
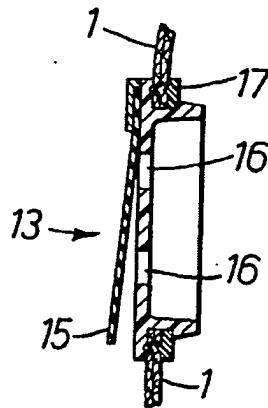


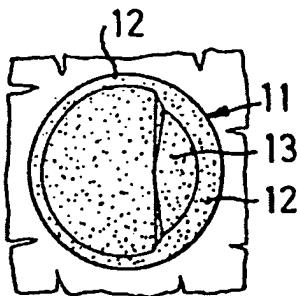
Fig. II

## **Embodiment of Applicants' Invention**

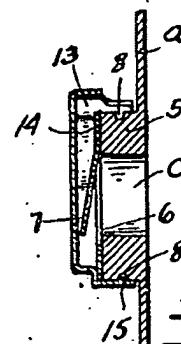
The prior art references to Simpson, Söderberg, and Shindel do not teach or suggest a flexible flap that is biased towards the seal surface. Further, none of these references suggest the structure necessary to create such bias. Thus, none of these references show valve seat structure that enables the flap to be "pressed towards the seal surface in an abutting relationship therewith under any orientation of the valve." This fact may be understood through a quick examination of each of their valve constructions:

**FIG. 2.**

Simpson

**FIG. 2**

Söderberg

**Fig. 2**

Shindel

In Simpson, Söderberg, and Shindel, there is no non-alignment between the flap-retaining surface and the seal surface to create a flap bias. Not only do each of these references not teach or suggest the structure necessary to provide a bias on the flap, but each suggests a structural approach that leads a person of ordinary skill away from applicants' invention. For example, Simpson describes the use of an antechamber to prevent valve leakage<sup>1</sup>, Söderberg teaches using a beveled edge for this purpose<sup>2</sup>, and Simpson teaches using a hinged flap.<sup>3</sup> Since they each provide an alternative construction that leads a person of ordinary skill away from applicants' claimed device, these references, individually and collectively, provide very good evidence of the nonobviousness of applicants' invention.<sup>4</sup>

<sup>1</sup> See Simpson at page 1, lines 58-64.

<sup>2</sup> See Söderberg at page 5, lines 1-14.

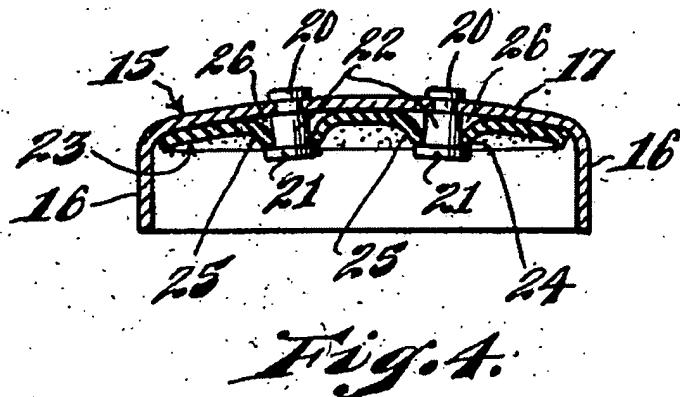
<sup>3</sup> See Simpson at Figure 5.

<sup>4</sup> See, e.g., *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131-32 (Fed. Cir. 1994) ("A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant."); *In re Grassell*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) ("The claimed catalyst which contained both iron and an alkali metal was not suggested by the combination of a reference which taught the interchangeability of antimony and alkali metal with the same beneficial result, combined with a reference expressly excluding antimony from, and adding iron to, a catalyst."); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (CCPA 1963) (reference teaches away if it leaves the impression that the product would not have the property sought by applicant); see also MPEP § 2145(D)(2) ("Reference cannot be combined where reference teaches away from their combination.")

This evidence of nonobviousness is not overcome by U.S. Patent 2,105,183 to Cover. Cover suggests a solution that runs counter to the express teachings in each of Simpson, Söderberg, and Shindel. First, unlike Simpson, Söderberg, and Shindel, Cover suggests a dual-flap system not a single-flap. Second, Cover describes the use of cone-like portions 25 in the flap to create a bias that would keep the flap closed (see FIG. 4 below). There would be no need for such cone-like portions in view of Simpson's provision for an antechamber, Söderberg's provision for a beveled flap, or Shindel's provision for a hinged flap. Thus, there is no reason of record for why a person of ordinary skill would have made the suggested combination.

In any event, Cover, even if combined with any or all of these documents, fails to teach or suggest the basic structure of applicants' invention. As such, Cover does not complete the picture even if the combination would have been made.

Cover provides apertures in the valve element that are "adapted to register with the pins 20":



These apertures are smaller than the reduced portions 22 of the pins 21 "so that the aperture forming walls 25 seat in a cone-like manner about the reduced portions 22 of the pins 20, and in this manner they form pockets 26 between the portions of the flap resting on the base plates 17, as particularly shown in Figure 4."<sup>5</sup> Cover indicates that "the curved portions 25 will be under tension and will gently but firmly force the valve to lie snugly upon the base plate 17 within the flange 16."<sup>6</sup> Thus, it is the cone-like curved portions 25 of the valve flap 23 that provide the bias

<sup>5</sup> See Cover at page 1, lines 47-52.

<sup>6</sup> See Cover at page 2, lines 4-7.

for the flap. It is not the holding of the flexible flap against a flap-retaining surface, in a location and position relative to the seal surface, that provides a bias. Cover also is silent on whether his valve flap can remain in a closed position under any orientation of the valve. Thus, it also is not clear that Cover can achieve the benefits of applicants' invention, even in a dual-flap configuration, which has shorter flaps.

Secondly, Shindel — which is relied on to show a valve cover that has a holding surface to engage the flap — does not teach or suggest this missing feature. Shindel does not even describe a surface on the valve cover which holds the flap against a flap-retaining surface. Shindel's flexible flap, includes a rim portion 6 that extends 360° around the flap 7:



Shindel's valve cover 10 (see FIGs. 2 and 3) has interior offsets 14 that "press the rim portion 6 of the valve to its seat upon the boss when the cap is in place upon the latter" (emphasis added).<sup>7</sup> Thus, it is apparent that Shindel's valve cover 10 does not engage the valve flap 7; it only engages the rim 6. Therefore, Shindel's valve cover teaching could not properly be applied to engage a flexible flap — particularly a centrally-mounted flap like Cover — without some further creative effort by a person of ordinary skill.

Thirdly, even if Shindel did teach using a surface on the valve cover to hold the flap against a flap-retaining surface, there also is no teaching or suggestion that Shindel and Cover could be appropriately combined to lead a person of ordinary skill to applicants' invention. As indicated above, Cover requires that the flap have a pair of cone-like members 25 to provide a bias for keeping the flap closed. If Shindel's valve cover 10 were to cause Cover's flexible flap to be held against Cover's base plate 17, the cone-like members 25 would no longer exist. The bias

<sup>7</sup> See Shindel at lines 53-55.

described to keep Cover's flap forced "snugly upon the base plate 17" therefore would not be present. The teachings of Shindel and Cover accordingly are not compatible with each other. Cover requires cone-like members 25 to encourage flap 23 to create flap bias against plate 17. Thus, even if you ignored the fact that Shindel's valve cover does not engage the flap, Cover's cone-like members 25 would not be possible if Cover's valve flap 23 was seated against plate 17 using Shindel's teachings. Without the cone-like members, the Cover bias would not be present and thus a seemingly insufficiently biased flap would be the likely result. As such, Shindel's teachings cannot be properly combined with Cover to arrive at applicants' invention.<sup>8</sup>

Finally, please note that Cover describes a dual-flap system whereas applicants' invention requires a single flap. In a single-flap system, there is one free portion — not two free portions. To keep a valve flap closed under any orientation using a single-flap system is manifestly different from a dual-flap system where the moment arms are shorter. Even though Cover's flap has shorter moment arms, Cover does not indicate that its dual-flap valve can stay closed under any orientation. There accordingly would be no reason to suspect that Cover's teachings could be applied to a single-flap system to keep the flap closed under any orientation. And even if Cover's teachings could be applied to achieve such success, Cover would be doing so by a different means — namely, cone-like portions 25 on the flap — not a flap-retaining surface, valve cover surface, and seal surface relationship. Only applicants demonstrate how to keep a single-flap system closed under any orientation. Any only applicants' invention describes the structural relationship that can achieve this result.

Applicants also have presented newly added claims 88-89. Not only does the prior art fail to suggest the structure and benefits of applicants' invention as mentioned above, but it also fails to teach or suggest the subject matter of the newly-presented claims. Each of the references cited above describes a flexible flap that is either circular or elliptical in configuration. None of the references teach or suggest a filtering face mask that has a flexible flap that exhibits the frontal profile recited in claims 88 and 89. Accordingly, these claims also should be patentable over the art of record.

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<sup>8</sup> *Tec Air Inc. v. Denso Mfg.*, 192 F.3d 1353, 52 USPQ2d 1294 (Fed. Cir. 1999) ("If references taken in combination would produce a 'seemingly inoperable device' we have held that such references teach away from the combination and thus cannot serve as predicates for a *prima facie* case of obviousness.").

In short, the primary prior art references each teach away from applicants' invention by suggesting alternative solutions. The secondary references do not teach or suggest what is lacking in the primary references, and they do not present teachings that are compatible with each other. Further, even if the secondary references could be combined, and even if they did teach what was lacking in the primary references, there is no expectation that such a result would yield successful results. Further, the totality of references also fail to suggest the invention of the newly-added dependent claims.

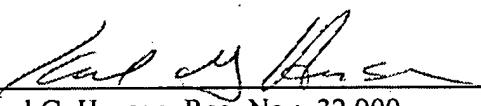
For these reasons, and for the reasons presented in applicants' Appeal Brief filed April 19, 2007, applicants submit that the presently-claimed subject matter would not have been obvious to a person of ordinary skill in view of the art of record. Please further consider the outstanding rejections in light of the arguments presented above.

Respectfully submitted,

July 7, 2008

Date

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